



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:  
Sergey Dzekunov

Serial No.: 10/675,592

Filed: September 30, 2003

For: APPARATUS AND METHOD FOR  
STREAMING ELECTROPORATION

Group Art Unit: 1744

Examiner: Unknown

Atty. Dkt. No.: MAXC:014US

CERTIFICATE OF MAILING  
37 C.F.R. 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: MS MISSING PARTS, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below:

February 17, 2004

Date

*Michael C. Barrett*

Michael C. Barrett

INFORMATION DISCLOSURE STATEMENT

MS MISSING PARTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record. Copies of the listed documents required by 37 C.F.R. § 1.98(a)(2) are enclosed for the convenience of the Examiner.

In accordance with 37 C.F.R. §§ 1.97(g), (h), this Information Disclosure Statement is not to be construed as a representation that a search has been made, and is not to be construed to be



in admission that the information cited is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

The present Information Disclosure Statement is being filed prior to the receipt of a first Official Action reflecting an examination on the merits, and hence is believed to be timely filed in accordance with 37 C.F.R. § 1.97(b). No fees are believed to be due in connection with the filing of this Information Disclosure Statement, however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be deemed necessary for any reason relating to these materials, the Commissioner is authorized to deduct the appropriate fees from Fulbright & Jaworski Deposit Account No.: 50-1212/MAXC:014US.

Applicant respectfully requests that the listed documents be made of record in the present case.

Respectfully submitted,

Michael C. Barrett  
Reg. No. 44,523  
Attorney for Applicant

FULBRIGHT & JAWORSKI L.L.P.  
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Austin, Texas 78701  
(512) 474-5201

Date: February 17, 2004



Form PTO-1449 (modified)

List of Patents and Publications for Applicant's

## INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

Atty. Docket No.  
MAXC:014USSerial No.  
10/675,592Applicant  
Sergey DzekunovFiling Date:  
September 30, 2003Group:  
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## U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
	A1	2001/0001064	5/10/01	Holaday	435	173.6	12/14/00
	A2	2,955,076	10/4/60	Gossling	N/A	N/A	10/4/56
	A3	3,676,325	7/11/72	Smith <i>et al.</i>	204	288	6/8/70
	A4	4,075,076	2/21/78	Xylander	204	206	9/30/75
	A5	4,081,340	3/28/78	Zimmermann <i>et al.</i>	204	180	1/25/77
	A6	4,192,869	3/11/80	Nicolau <i>et al.</i>	424	199	10/17/78
	A7	4,220,916	9/2/80	Zimmermann <i>et al.</i>	324	71	4/13/79
	A8	4,252,628	2/24/81	Boulton <i>et al.</i>	204	257	2/23/78
	A9	4,321,259	3/23/82	Nicolau <i>et al.</i>	424	101	3/22/79
	A10	4,440,386	4/3/84	Achelpohl	271	70	3/4/82
	A11	4,473,563	9/25/84	Nicolau <i>et al.</i>	424	224	11/2/81
	A12	4,476,004	10/9/84	Pohl	204	299	10/26/83
	A13	4,478,824	10/23/84	Franco <i>et al.</i>	424	101	8/8/83
	A14	4,622,302	11/11/86	Sowers	435	172.2	8/9/84
	A15	4,652,449	3/24/87	Ropars <i>et al.</i>	424	101	10/27/83
	A16	4,663,292	5/5/87	Wong <i>et al.</i>	435	287	
	A17	4,695,547	9/22/87	Hilliard <i>et al.</i>	435	173	4/2/86
	A18	4,699,881	10/13/87	Matschke	435	173	6/4/86
	A19	4,752,586	6/21/88	Ropars <i>et al.</i>	435	287	11/20/86
	A20	4,764,473	8/16/88	Matschke <i>et al.</i>	435	287	11/4/86
	A21	4,784,737	11/15/88	Ray <i>et al.</i>	204	180.1	4/18/86
	A22	4,800,163	1/24/89	Hibi <i>et al.</i>	435	287	12/15/87
	A23	4,804,450	2/14/89	Mochizuki <i>et al.</i>	204	299	12/10/86

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	A24	4,822,470	4/18/89	Chang	204	299	10/9/87
	A25	4,840,714	6/20/89	Littlehales	204	180.1	5/13/87
	A26	4,849,089	7/18/89	Marshall, III	204	299	2/21/89
	A27	4,849,355	7/18/89	Wong	435	172.3	12/30/87
	A28	4,874,690	10/17/89	Goodrich, Jr. <i>et al.</i>	435	2	8/26/88
	A29	4,882,281	11/21/89	Hilliard <i>et al.</i>	435	287	8/26/86
	A30	4,906,576	3/6/90	Marshall, III	435	287	5/8/87
	A31	4,910,140	3/20/90	Dower	435	172.3	4/18/88
	A32	4,923,814	5/8/90	Marshall, III	435	173	4/26/89
	A33	4,931,276	6/5/90	Franco <i>et al.</i>	424	533	3/13/89
	A34	4,945,050	7/31/90	Sanford <i>et al.</i>	435	172.1	11/13/84
	A35	4,946,793	8/7/90	Marshall, III	435	291	12/12/88
	A36	4,956,288	9/11/90	Barsoum	435	172.3	4/22/88
	A37	4,970,154	11/13/90	Chang	435	172.2	8/30/88
	A38	4,995,957	2/26/91	Ziegler <i>et al.</i>	204	182.8	5/9/88
	A39	5,007,995	4/16/91	Takahashi <i>et al.</i>	204	299	5/11/89
	A40	5,036,006	7/30/91	Sanford <i>et al.</i>	435	170.1	8/17/89
	A41	5,043,261	8/27/91	Goodrich <i>et al.</i>	435	2	6/2/89
	A42	5,098,843	3/24/92	Calvin	435	287	7/9/90
	A43	5,100,627	3/31/92	Buican <i>et al.</i>	422	108	11/30/89
	A44	5,100,792	3/31/92	Sanford <i>et al.</i>	435	172.1	1/24/89
	A45	5,114,681	5/19/92	Bertoncini <i>et al.</i>	422	111	3/9/90
	A46	5,124,259	6/23/92	Tada	435	172.1	8/22/90

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	A47	5,128,257	7/7/92	Baer	435	173	8/31/87
	A48	5,134,070	7/28/92	Casnig	435	173	10/30/90
	A49	5,135,667	8/4/92	Schoendorfer	210	782	6/14/90
	A50	5,137,817	8/11/92	Busta <i>et al.</i>	435	173	10/5/90
	A51	5,139,684	8/18/92	Kaali <i>et al.</i>	210	748	11/16/90
	A52	5,173,158	12/22/92	Schmukler	204	182.3	7/22/91
	A53	5,232,856	8/3/93	Firth	435	287	7/30/90
	A54	5,283,194	2/1/94	Schmukler	435	287	7/16/92
	A55	5,424,209	6/13/95	Kearney	435	284	3/19/93
	A56	5,501,662	3/26/96	Hofmann	604	20	9/12/94
	A57	5,545,130	8/13/96	Hofmann <i>et al.</i>	604	4	10/12/94
	A58	5,612,207	3/18/97	Nicolau <i>et al.</i>	435	173.6	3/23/94
	A59	5,676,646	10/14/97	Hofmann <i>et al.</i>	604	4	3/14/96
	A60	5,720,921	2/24/98	Meserol	424	44	3/10/95
	A61	5,728,281	3/17/98	Holmström <i>et al.</i>	204	403	11/13/96
	A62	6,074,605	6/13/00	Meserol <i>et al.</i>	422	33	3/11/96
	A63	6,077,479	7/20/00	Milde and Philp	422	23	7/25/96
	A64	6,090,617	7/18/00	Meserol	435	285.2	12/5/96
	A65	6,485,961 B1	11/26/02	Meserol	435	285.2	7/18/00

## Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
	B1	AU 680890	10/11/94	Austria			

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✓	B2	CA 2,214,800	2/22/02	Canada			
✓	B3	CN 1195997	10/14/98	China			
✓	B4	DE 2405119	9/4/75	Germany			Abstract
✓	B5	DE 3603029	8/6/87	Germany			Abstract
✓	B6	DE 4440386	5/15/96	Germany			
	B7	EP 0137504	4/17/85	Europe			
	B8	EP 0343783	11/29/89	Europe			
	B9	EP 0362758	4/11/90	Europe			
	B10	EP 0472772	3/4/92	Europe			
	B11	EP 0798309	10/1/97	Europe			
	B12	JP 1141582	6/2/89	Japan			Abstract
	B13	JP 2131584	5/21/90	Japan			Abstract
	B14	JP 2131585	5/21/90	Japan			Abstract
	B15	JP 2186993	7/23/90	Japan			Abstract
	B16	JP 3195485	8/27/91	Japan			Abstract
	B17	JP 4027393	1/30/92	Japan			Abstract
	B18	JP 62151174	7/6/87	Japan			Abstract
	B19	JP 62171687	7/28/87	Japan			Abstract
	B20	JP 62228277	10/7/87	Japan			Abstract
	B21	JP 62265975	11/18/87	Japan			Abstract
	B22	JP 63141587	6/14/88	Japan			Abstract
	B23	JP 6349068	12/22/94	Japan			Abstract
	B24	JP 7180029	7/18/95	Japan			Abstract

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	B25	JP 7320720	12/8/95	Japan			Abstract
	B26	WO 01/24830	4/12/01	PCT			
	B27	WO 88/04322	6/16/88	PCT			
	B28	WO 89/02464	3/23/89	PCT			
	B29	WO 89/03426	4/20/89	PCT			
	B30	WO 91/18103	11/28/91	PCT			
	B31	WO 94/21117	9/29/94	PCT			
	B32	WO 96/28199	3/11/96	PCT			
	B33	WO 98/24490	6/11/98	PCT			

### Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	"Advanced Coatings for the Medical Industry," Multi-Arc Scientific Coatings, Copyright © Andal Corp.
	C2	"Biological Buffers," In: <i>The Biological Engineering Handbook</i> , Bronzino (ed.), CRC Press, pp. 1650, c1995.
	C3	"Ion Bond® 16 Zirconium Nitride Coating," Multi-Arc, Inc., 1996.
	C4	"Ion Bond® 17 Titanium Aluminum Nitride Coating," Multi-Arc, Inc., 1995.
	C5	"Ion Bond® 19 Chromium Nitride Coating," Multi-Arc, Inc., 1995.
	C6	"Ion Bond® Coatings for Instruments, Design Considerations," Multi-Arc, Inc., 1995.
	C7	"Ion Bond® Coatings for Instruments, Most Commonly Asked Questions," Multi-Arc, Inc., 1995.
	C8	"Preparation of certain reagents, anticoagulants and preservative solutions," In: <i>Practical Haematology</i> , 5 <sup>th</sup> Edition, Dacie and Lewis (eds.), Appendices, pp.598, 1975

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Exam. Init.	Ref. Des.	Citation
	C9	"The Ion Bond Network," Multi-Arc, Inc., 1995.
	C10	Abatti <i>et al.</i> , "Development of a new geometrical form of micropipette: electrical characteristics and an application as a potassium ion selective electrode," <i>IEEE Trans. Biomed. Eng.</i> , 39:43-48, 1992.
	C11	Asakami <i>et al.</i> , "Materials for electrode of alkali metal thermoelectric converter (AMTEC) (II)," <i>J. Mater. Sci. Lett.</i> , 9(8):892-894, 1990.
	C12	Bakker Schut <i>et al.</i> , "A new principle of cell sorting by using selective electroporation in a modified flow cytometer," <i>Cytometry</i> , 11(6):659-666, 1990.
	C13	Bartoletti <i>et al.</i> , "The number of molecules taken up by electroporated cells: quantitative determination," <i>FEBS Letters</i> , 256(1-2):4-10, 1989.
	C14	Behrndt and Lunk, "Biocompatibility of TiN preclinical and clinical investigations," <i>Materials Sciences &amp; Engineering</i> , A139:58-60, 1991.
	C15	Brüggemann <i>et al.</i> , "Low-oxygen-affinity red cells produced in a large-volume, continuous-flow electroporation system," <i>Transfusion</i> , 35(6):478-486, 1995.
	C16	Capizzi <i>et al.</i> , "Amifostine mediated protection of normal bone marrow from cytotoxic chemotherapy," <i>Cancer</i> , 72:3495-3501, 1993.
	C17	Chassy <i>et al.</i> , "Transformation of bacteria by electroporation," <i>Trends in Biotechnology</i> , 6(12):303-309, 1988.
	C18	Coll <i>et al.</i> , "Metallurgical and Tribological modification of titanium and titanium alloys by plasma assisted techniques," <i>Workshop H Society for Biomaterials Implat Retrieval Symposium</i> , September 17, 1992.
	C19	Davalos <i>et al.</i> , "Electroporation: bio-electrochemical mass transfer at the nano scale," <i>Microscale Thermophysics Engineering</i> , 4:147-159, 2000.
	C20	Djuzenova <i>et al.</i> , "Effect of medium conductivity and composition on the uptake of propidium iodide into electroporated myeloma cells," <i>Biochim Biophys.</i> , 1284(2):143-152, 1996.
	C21	Duncan and Shivan, "High frequency transformation of whole cells of amino acid producing coryneform bacteria using high voltage electroporation," <i>Bio/Technology</i> , 7:1067-1070, 1988.
	C22	Egorov and Noikova, "Effect of phase composition of TiN-Ni sintered electrode materials of characteristics of the ESA process," <i>Sov. Powder Metall Met. Ceram.</i> , 29(9):705-710, 1991.

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Exam. Init.	Ref. Des.	Citation
	C23	Einck and Holaday, "Enhancement of tissue oxygenation by intracellular introduction of inositol hexaphosphate by flow electroporation of red blood cells," In: <i>Tissue Oxygenation in Acute Medicine (Update in Intensive Care and Emergency Medicine, 33)</i> , Sibbald et al., (eds.), pp. 357-374, c1998.
	C24	Eppich et al., "Pulsed electric fields for selection of hematopoietic cells and depletion of tumor cell contaminants," <i>Nat. Biotechnol.</i> , 18:882-887, 2000.
	C25	Freeman et al., "Theory of electroporation of planar bilayer membranes: predictions of the aqueous area, change in capacitance, and pore-pore separation," <i>Biophys. J.</i> , 67(1):42-56, 1994.
	C26	Gášková et al., "Effect of a high-voltage electric pluses on yeast cells: factors influencing the killing efficiency," <i>Bioelectrochem. Bioenerget.</i> , 39:195-202, 1996.
	C27	Gersonde and Nicolau, "Enhancement of the O <sub>2</sub> release capacity and of the Bohr-effect of human red blood cells after incorporation of inositol hexaphosphate by fusion with effector-containing lipid vesicles," In: <i>Origins of Cooperative Binding by Hemoglobin</i> , 277-282, 1982.
	C28	Gersonde and Nicolau, "Improvement of the red blood cell O <sub>2</sub> release capacity by lipid vesicle-mediated incorporation of inositol hexaphosphate," <i>Blut</i> , 39:1-7, 1979.
	C29	Gersonde and Nicolau, "Modification of the oxygen affinity of intracellular haemoglobin by incorporation of polyphosphates into intact red blood cells and enhanced O <sub>2</sub> release in the capillary system," <i>Biblthca Haemat.</i> , 46:81-92, 1980.
	C30	Gersonde and Weiner, "The influence of infusion rate on the acute intravenous toxicity of phytic acid, a calcium-binding agent," <i>Toxicology</i> , 22:279-286, 1982.
	C31	Ghosh et al., "Monitoring electroporabilization in the plasm amembrane of adherent mammilian cells," <i>Biophys. J.</i> , 64(5):1602-1609, 1993.
	C32	Graziadei et al., "Introduction of unlabeled proteins into living cells by electroporation and isolation of viable protein-loaded cells using dextran-fluorescein isothiocyanate as a marker for protein uptake," <i>Anal. Biochem.</i> , 194:198-203, 1991.
	C33	Groves, "Application of the electrical sizing priciple of Coulter to a new multiparameter system," <i>IEEE Transactions on Biomedical Engineering</i> , 27:364-369, 1980.
	C34	Herwijer et al., "high speed photo damage cell selection using bromodeoxyuridine/Hoechst 33342 photo sensitized cell killing," <i>Cytometry</i> , 9:143-149, 1988.

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Exam. Init.	Ref. Des.	Citation
	C35	Hirai <i>et al.</i> , "A new antitumor antibiotic, FR-900482" <i>J. of Antibiotics</i> , 40/5:607-611, 1987.
	C36	Hofmann and Evans, "Eletronic genetic—physical and biological aspects of cellular electromanipulation," <i>IEEE Engineering in Medicine and Biology Magazine</i> , 6-11, 19-22, 1986.
	C37	Hofmann <i>et al.</i> , "Electric field pulses can induce apoptosis," <i>J. Membr. Biol.</i> , 169(2):103-109, 1999.
	C38	Huang and Rubinsky, "Microfabricated electroporation chip for single cell membrane permeabilization," <i>Sensors and Actuators</i> , 89:242-249, 2001.
	C39	Huang and Rubinsky, "Micro-electroporation: improving the efficiency and understanding of electrical permeabilization of cells," <i>Biomedical Microdevices</i> , 2(2):145-150, 1999.
	C40	Kinosita and Tsong, "Voltage-induced conductance in human erythrocyte membranes," <i>Biochimica et Biophysica Acta</i> , 554:479-497, 1979.
	C41	Kobayashi <i>et al.</i> , "Fabrication of zirconim nitride sintered bodies and the application for electrode materials," <i>J. Ceram. Soc. Jpn.</i> , 97(10):1189-1194, (with English summary), 1989 .
	C42	Kotnik and Miklavčič, "Second-order model of membrane electric field induced by alternating external electric fields," <i>IEEE Trans. Biomed. Eng.</i> , 47(8):1074-1081, 2000.
	C43	Kullmann <i>et al.</i> , "In vitro effects of pentoxifylline on smooth muscle cell migration and blood monocyte production of chemotactic activity for smooth muscle cells: potential therapeutic benefit in the adult respiratory distress syndrome," <i>Am J. Respir. Cell</i> , 8:83-88, 1993.
	C44	Kurtz and Gordon, "Transparent conducting electrodes on silicon," <i>Sol. Energy Mater.</i> , 15(4):229-236, 1987.
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